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A new species of the genus *Phebellia* Robineau-Desvoidy (Diptera: Tachinidae) from Finland

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Abstract

A new tachinid species, *Phebellia margaretae* **n. sp.**, is described from Finland. It is near to the Palaearctic species *P. glauca* (Meigen, 1824), *P. glaucoides* Herting, 1961 and *P. laxifrons* Shima, 1981. Its position in the genus is discussed.
Keywords: Tachinidae, new species, Finland, *Phebellia*.

Zusammenfassung

Eine neue Raupenfliegen-Art, *Phebellia margaretae* **n. sp.**, aus Finnland wird beschrieben. Die neue Art steht den paläarktischen Arten *P. glauca* (Meigen, 1824), *P. glaucoides* Herting, 1961 und *P. laxifrons* Shima, 1981 nahe. Ihre Stellung in der Gattung wird diskutiert.

Contents

1 Introduction 1
2 Materials and methods 2
3 Description of *Phebellia margaretae* **n. sp.** 2
4 Differences to other species of *Phebellia* 7
5 References 8

1 Introduction

The genus *Phebellia* Robineau-Desvoidy, 1846 (sensu Mesnil 1955; Herting 1961, 1984; Shima 1981, 1982) is mainly distributed in the Nearctic and Palaearctic regions with a small representation also in the Oriental region. Up to the present 19 species of *Phebellia* (including *Prooppia*) are recorded from the Palaearctic region (Herting 1984). Eight species are assigned to the genus *Phebellia* in the Nearctic region, following a transfer of three species to the re-established genus *Prooppia* (O'Hara & Wood 2004). In this paper a new species, *Phebellia margaretae* n. sp., is described from Finland.

The genus *Phebellia* Robineau-Desvoidy belongs to the large and multiform tribe Eryciini (Herting 1984, O'Hara & Wood 2004). Most Eryciini are known to de-

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posit incubated eggs directly on the host integument, but some, e.g. *Aplomya* Robineau-Desvoidy, 1830 and several species previously in *Phebellia* (but recently transferred to the re-established genus *Prooppia* Townsend, 1926 by WOOD 1987), deposit unembryonated eggs on the host. Host-records are only available for a minority of the species of *Phebellia* but indicate that members of this genus parasitize larvae of Cimbicidae (Hymenoptera), Noctuidae and Notodontidae (Lepidoptera) (HERTING 1960, TSCHORSNIG & HERTING 1994, O'HARA & WOOD 2004).

At least the Palaearctic *Phebellia* are recognized by the following diagnosis. Head: Fronto-orbital plate in male without proclinate outer orbital setae; 2 reclinate inner orbital setae, posteriormost seta smaller; ocellar setae strong and proclinate; parafacial narrowing below, at its narrowest point narrower than flagellomere 1; eyes densely haired. Thorax: Prosternum haired; proepisternum bare; postpronotum with 3 basal setae arranged in an obtuse triangle, and with 2 smaller anterior setae; katepisternum with 3 setae; katepimeron bare, or with at most three or four hairs on anterior half; first postsutural supra-alar seta longer and stouter than the notopleural setae; lateral scutellar setae 0.9–1.1 times as long as basal setae; vein R_{4+5} with 1–2 small setae basally. Abdomen: Mid-dorsal depression on syntergite 1+2 extending back to hind margin; tergite 2 with 1–2 pairs of median marginal setae.

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2 Materials and methods

The *Phebellia* specimens studied for this paper are deposited in the following institutions and private collections: Zoological Museum, University of Helsinki; Swedish Museum of Natural History [= Naturhistoriska Riksmuseet], Department of Entomology, Stockholm; Staatliches Museum für Naturkunde, Stuttgart; private collection of CHRISTER BERGSTRÖM, Uppsala; private collection of ROGER ENGELMARK, Umeå.

The dissection of the male and female terminalia was performed following the method described by ANDERSEN (1996). The dissected terminalia are preserved in glycerol in a small plastic tube pinned together with the specimen.

Terminology of external morphology and terminalia follows MCALPINE (1981). Measurements and ratios of head follow TSCHORSNIG & HERTING (1994).

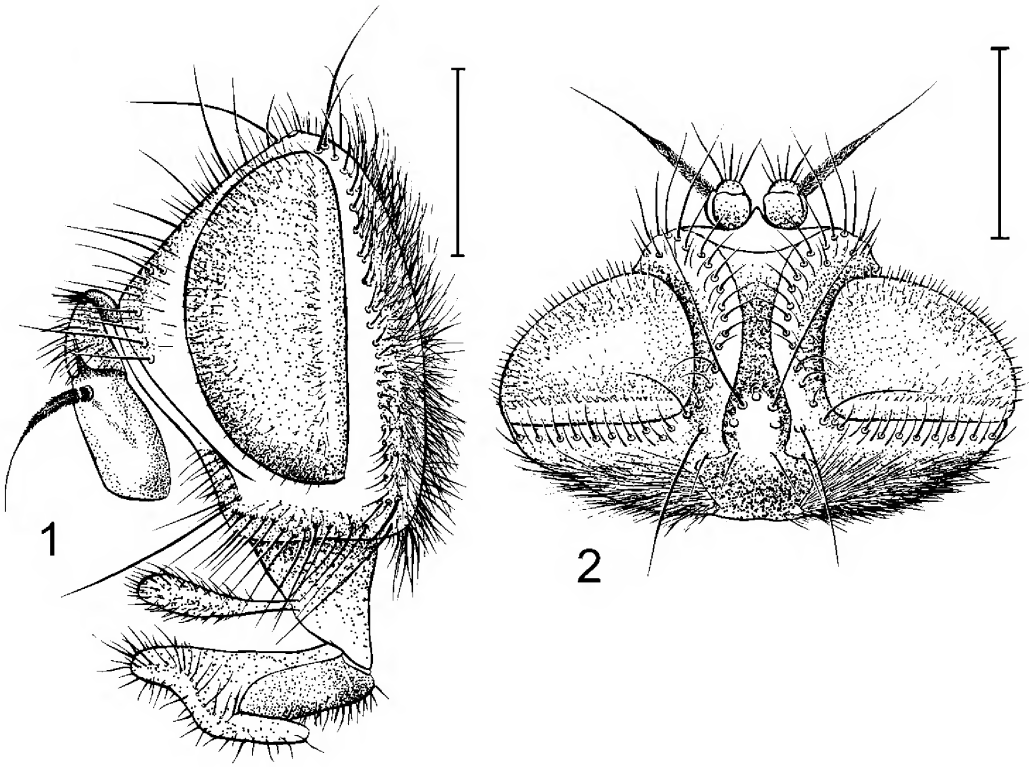
3 Description of *Phebellia margaretae* n. sp.

Material

Holotype: ♂, Finland, Prov. Ostrobottnia borealis, S part, Hailuoto, Kirkkolahti 16.VII.1947, "collected on a shore with cowbane *Cicuta virosa*", leg. R. FREY [851].

Paratypes: 1 ♂, Finland, Prov. Tavastia borealis, Saarijärvi, leg. WOLDSTEDT. – 1 ♀, same data as holotype, leg. R. FREY [844]. – 1 ♀, Savonia borealis, Idensalmi, leg. LUNDSTRÖM. – 2 ♀♀, Savonia borealis, Tuovilanlaks (= Maanika), leg. PALMÉN.

Holotype and paratypes are deposited in the Zoological Museum, Division of Entomology, Helsinki.



Figs. 1–2. *Phebellia margaretae* n. sp., male holotype, head in lateral (1) and dorsal (2) view. – Scales: 1 mm.

The numbers in square brackets refer to FREY's notebook where the quoted information was found.

Etymology

The new *Phebellia* species is dedicated to Mrs. MARGARETA ROMAN (Uppsala, Sweden), the wife of the author.

Description

Male (statements within square brackets refer to male paratype):

Colour and pruinosity: Body black; legs black or brownish black; scutellum narrowly reddish brown at apex. Frontal vitta brown; face at mouth margin, anterior portion of parafacial, and gena (except the genal dilation) reddish brown in frontal view. Antenna black; arista reddish yellow in basal $^2/_5$. Palpus reddish yellow in apical $^1/_2$, gradually darkened towards base. Calypters white, inner margin of lower calypter near scutellum somewhat darkened. Tegula black, basicosta brown. Head and thorax covered with light greyish white pruinescence; scutum with five dark postsutural longitudinal stripes; presutural area with four dark stripes, middle one is missing, the lateral ones broadly continuing at level of the strong posthumeral seta. Abdominal tergites with basal bands of greyish white pruinescence covering about $^2/_3$ of tergites 3, 4 and 5.

Head (Figs. 1–2): Eyes haired. Length of frons slightly longer than length of face. Frons at its narrowest point 0.73 [0.65] times as wide as an eye in dorsal view. Interfrontal area at midpoint slightly narrower than corresponding parafrontal area. Inner vertical seta 0.6 of eye-height; outer vertical seta strong, about 0.6 times as long as inner vertical seta. Ocellar setae strong and proclinate. A row of 11–13 frontal setae descending to level of apex of pedicel; 2 reclinate inner orbital setae, posterior seta smaller. Parafrontal outside the frontal setae with numerous long hairs, at least as long as $^1/_3$ the length of the strong frontal setae; no hairs [one hair] descending below level of lowest frontal seta. Parafacial strongly narrowing below, at its narrowest point approximately $^1/_4$ as wide as flagellomere 1, bare. Facial ridge with 6–7 small setae and some additional setulae in its lower $^1/_4$. Back of head covered with white hairs, with numerous small black setae directly behind the postocular row. Antenna black; flagellomere 1 evenly curved at apex and at inner margin, 2.1 times as long as maximum width, 2.0 [2.1] times as long as pedicel. Sclerotized part of prementum approximately 2 times as long as its diameter. Palpus widened and flattened apically, slightly longer than flagellomere 1, with dense and short hairs.

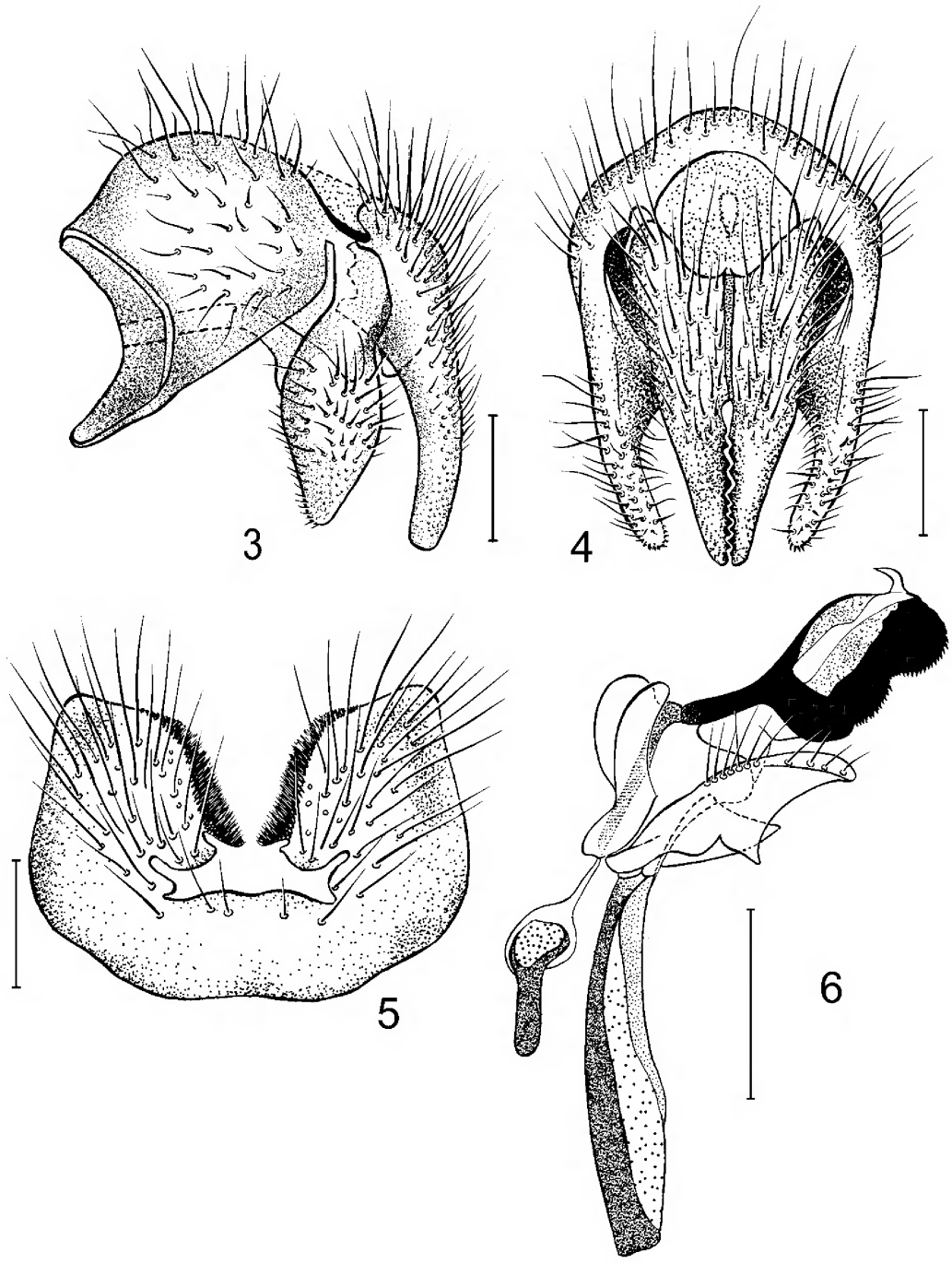
Thorax: Prosternum hairy, proepisternum bare. Right postpronotum with 3 basal setae arranged in an obtuse triangle, and 2 smaller anterior setae; left postpronotum with 4 basal setae (one additional outer seta) also arranged in an obtuse triangle, and 2 smaller anterior setae. Scutum with 3+3 pairs of acrostichal setae, 3+4 pairs of dorsocentral setae and 0[–1] + 3 pairs of intra-alar setae. First postsutural supra-alar seta strong. Katepisternum with 3 setae. Katepimeron with some hairs on anterior half. Anepimeral seta strong, as long as the smallest katepisternal seta. Scutellum with strong basal, lateral and subapical setae and with strong crossed horizontal apical setae; lateral setae subequal with the basal setae. Dorsal surface of scutellum with the normal pair of discal setae.

Wing: Second costal sector bare ventrally. Costal spine weakly differentiated. Vein R_{4+5} with 1–2 small setae basally. Fourth costal section 1.6 [1.4] times as long as sixth costal section. Bend of M without an appendage, apical section of M slightly concave. Section of M between crossvein dm-cu and bend 0.88 [0.74] times the distance between bend of M and margin of wing. Last section of CuA_1 shorter than crossvein dm-cu.

Legs: Claws and pulvilli as long as fifth tarsal segment. Fore tibia with 2 posterior setae and a proximal row of 6–7 anterodorsal setae. Mid tibia with 3 anterodorsal setae, 2–3 posterior setae; one strong and an additional much weaker ventral seta. Hind tibia with an irregular row of 4–5 strong anterodorsal setae, and some much weaker setulae; 3–4 posterodorsal setae, 2–3 anteroventral setae and 2 dorsal preapical setae; preapical posteroventral seta missing. Hind coxa bare on posterior margin.

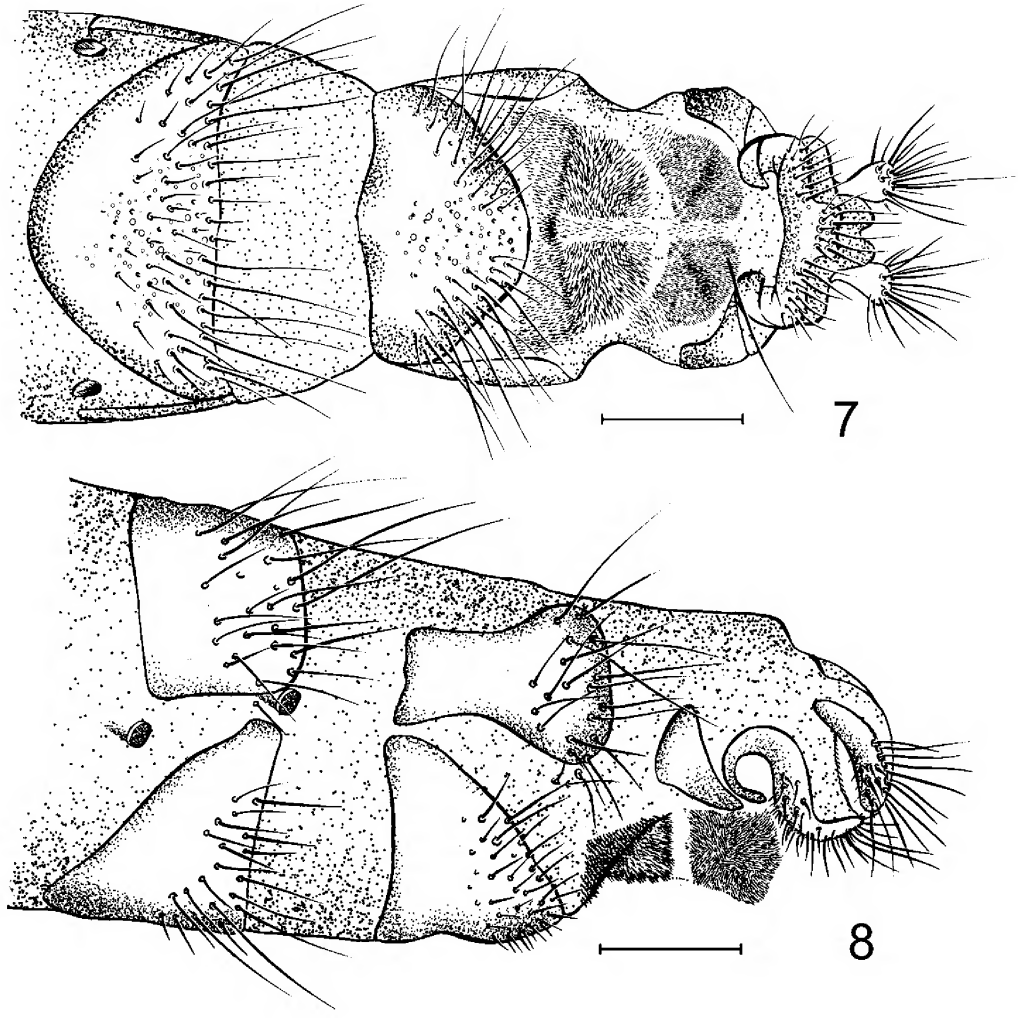
Abdomen: Mid-dorsal depression on syntergite 1+2 extending back to hind margin of that segment. Tergite 2 with 1(2) [2] pairs and tergite 3 with 2 pairs of median marginal setae [in male paratype almost a complete row of marginal setae]; tergites 4 and 5 each with a complete row of marginal setae. Tergite 3 with 6 (8) weak and scattered median discal setae; tergite 4 with an irregular row of 8 (10) discal setae, dorsolaterally with some additional suberect hairs. Tergite 5 with an irregular row of rather strong discal setae. Tergites 4 and 5 ventrally without patches of recumbent hairs.

Genitalia (Figs. 3–6): Fifth sternite 1.5 times as wide as long, posterior lobe with dense and rather strong hairs; sixth tergite wide and narrow, entire and without



Figs. 3–6. *Phebellia margaretae* n. sp., male holotype. – **3–4**. Epandrium, cerci and surstyli in lateral (3) and caudal (4) view. – **5**. Sternite 5 in ventral view. – **6**. Aedeagus, pregonite, postgonite, aedeagal apodeme and ejaculatory apodeme in lateral view. – Scales: 0.25 mm.

hairs; cerci in dorsal view broad, only approximately 2 times as long as broad at midpoint, evenly narrowed to apex, narrowly separated in about apical $^3/_5$, apical portion of inner side of each cercus strongly serrate, in lateral view evenly curved ventrally; surstylus clearly fused with epandrium, shorter than cerci, in lateral view



Figs. 7–8. *Phebellia margaretae* n. sp., female paratype, ovipositor in ventral (7) and lateral (8) view. – Scales: 0.25 mm.

broad and densely covered with black hairs in apical half; pregonite long, with hairs along its posterior margin; postgonite rather short; epiphallus broad; ventral plate of distiphallus with distinct spinules in the proximal part, not expanded laterally.

Female, differing from male as follows:

Parafrontal with 2 proclinate outer orbital setae. Abdominal tergites with basal bands of pruinescence covering about the dorsal $^3/_4$ of tergites 3 and 4, and the basal $^2/_3$ of tergite 5. Frons broader, at its narrowest point 0.77–0.88 times as wide as an eye in dorsal view. First flagellomere 1.7–1.9 times as long as pedicel. Claws and pulvilli slightly shorter than fifth tarsal segment, which is about half as long as in male. Mid tibia with 4–5 anterodorsal setae.

Genitalia (Figs. 7–8): Uterus present; tergite 6 divided longitudinally into two hemitergites, densely covered with hairs on its posterior portion, the longest hairs along the posterior margin and about 2 times as long as the tergite; sternite 6 with less dense and shorter hairs than tergite 6; tergite 7 divided into two hemitergites

about 1.4 times as long as tergite 6; sternite 7 slightly shorter than sternite 6, basal margin weakly sclerotized but without incision, apex without rounded free distal portion; 6th spiracle in intersegmental membrane between tergite 6 and sternite 6, 7th spiracle close to lower posterior margin of tergite 6; sternite 8 absent; epiproct weakly sclerotized, without setae; hypoproct with posteriorly directed small setae; cercus long; intersegmental membrane ventrally between abdominal segment 7 and 8 broadly and densely covered with microtrichiae, and with a strong seta in one of two dissected females.

4 Differences to other species of *Phebellia*

The genus *Phebellia*, in the restricted sense of WOOD (1987), comprises – as far as investigated – species with a number of common characters: Palpus yellow or at least reddish yellow in the apical half; egg planoconvex, embryonated in the uterus; distiphallus of the aedeagus not expanded laterally. The species-groups recognized by SHIMA (1982) were based on the structures of the male and female terminalia and included – apart from four new species from Japan – also some widely distributed Palaearctic species. *P. margaretae* n. sp. is clearly assignable to the *glauca*-subgroup of SHIMA (1982). This subgroup includes two widely distributed Palaearctic species, *P. glauca* (Meigen, 1824) and *P. glaucoides* Herting, 1961, and one Japanese species, *P. laxifrons* Shima, 1981. They share the following structures of the male and female genitalia: Male: Tergite 6 entire; surstylus fused with epandrium. Female: Sternite 7 normal, without rounded free distal portion; tergite 8 absent; intersegmental membrane between abdominal segments 7 and 8 broadly and densely covered with microtrichiae. Compared with the other members of this subgroup, *P. margaretae* n. sp. most closely resembles the Japanese species *Phebellia laxifrons* Shima, 1981.

P. margaretae n. sp. can, apart from the male and female terminalia, be recognized among the other members of the *glauca*-subgroup by the combination of a number of characters: Scutellum black or sometimes narrowly reddish brown at apex; palpus usually brown with a reddish yellow tip; section of vein M between dm-cu and the bend 0.7–0.9 times as long as the distance from the bend to the wing margin; tibia black or brownish black. ♂: Frons 0.65–0.73 times as wide as an eye, with strong outer vertical setae; length of frons longer than length of face; fore claws and pulvilli as long as fifth tarsomere; tergites 3 and 4 with scattered discal setae, sometimes an irregular row of discal setae on tergite 4.

Males of *P. margaretae* n. sp. can be added to the Japanese species of *Phebellia* Robineau-Desvoidy by modifying couplet 7 of the key by SHIMA (1982: 72):

7 ♂: Fore claws and pullvilli shorter than or at most as long as 5th tarsomere; outer vertical seta strong. **7b**

– ♂: Fore claws and pullvilli distinctly longer than 5th tarsomere; outer vertical seta at most very weakly developed. **8**

7b Frons 0.65–0.73 times as wide as an eye; length of frons longer than length of face; tibia black or brownish black; fore claws and pulvilli as long as 5th tarsomere; tergites 3 and 4 with scattered discal setae. – Genitalia (Figs. 3–6): Cerci and surstylus distinctly stouter than in *laxifrons*; cerci in dorsal view broad to about middle and then evenly narrowed to apex, distance from base of suture to apex about 2 times the width of cerci at middle, somewhat broadly separated from each other in apical 2/3, in lateral view broad in its whole length and towards apex gradually a little more curved ventrally. Surstylus in lateral view

at middle about 2 times as broad as cercus at that point, strongly narrowed to apex. Distiphallus with apical portion not distinctly curved ventrally. ..... ***P. margaretae* n. sp.**

– Frons about as wide as an eye; length of frons shorter than length of face; tibia reddish yellow; fore claws and pulvilli about $^1/_2$ as long as 5th tarsomere; tergites 3 and 4 without discal setae. – Genitalia (fig. 1 in SHIMA 1981: 56): Cerci and surstylus more slender than in *P. margaretae*; cerci in dorsal view evenly narrowed to apex, distance from base of suture to apex about 3 times the width of cerci at middle, weakly separated from each other in apical $^3/_5$, in lateral view almost equally broad in its whole length and weakly curved ventrally. Surstylus in lateral view at middle about 1.5 times as broad as cercus at that point, weakly narrowed to apex. Distiphallus in apical portion distinctly curved ventrally. ..... ***P. laxifrons*** Shima

The new species keys out from other West Palaearctic species by modifying couplet 8 of the key by TSCHORSNIG & HERTING (1994: 51):

8 Section of wing vein M between dm-cu and the bend 1.7–2.2 times as long as the distance from the bend to the wing margin. Mid tibia with 2 ad setae (seldom 3). The three strong postpronotal setae form an angle of 90–110°. Black longitudinal stripes clearly defined on the presutural scutum. – Female with 5th tergite 1.20–1.35 times as long as tergite 4. ..... ***P. stulta*** Zetterstedt

– Section of vein M between dm-cu and the bend 0.7–1.7 times as long as the distance from the bend to the wing margin. Mid tibia almost always with 3–5 ad setae. The three strong postpronotal setae form an angle of 120–150°. Thoracic stripes variable. – Female with 5th tergite 1.0–1.1 times as long as tergite 4. ..... **8a**

8a Scutellum black or sometimes narrowly reddish brown at apex. Frons in male with strong outer vertical setae. Palpus usually brown with a light tip. Section of vein M between dm-cu and the bend 0.7–0.9 times as long as the distance from the bend to the wing margin. .. ***P. margaretae* n. sp.**

– Scutellum reddish brown in more than apical third. Frons in male without differentiated outer vertical setae. Palpus yellow. Section of vein M between dm-cu and the bend 1.1–1.7 times as long as the distance from the bend to the wing margin **9**

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